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BPMO NE/TB  
Ser 08-128  
April 22, 2008

Mr. Michael J. Daly  
Remedial Project Manager  
Federal Facilities Superfund Section  
U.S. Environmental Protection Agency (EPA)  
1 Congress Street, Suite 1100 (HBT)  
Boston, MA 02114-2023

Ms. Claudia Sait  
Remedial Project Manager  
Maine Department of Environmental Protection (MEDEP)  
Bureau of Remediation and Waste Management  
17 State House Station  
Augusta, ME 04333-0017

Dear Mr. Daly and Ms. Sait:

SUBJECT: RESPONSE TO COMMENTS ON THE DRAFT FINAL  
REMEDIAL INVESTIGATION WORK PLAN FOR SITE 17  
NAVAL AIR STATION (NAS) BRUNSWICK, MAINE

Enclosed are responses to comments (RTCs) received from the U.S. Environmental Protection Agency (EPA), dated February 21, 2008, and the Maine Department of Environmental Protection (MEDEP), dated March 12, 2008 on the Draft Final Remedial Investigation Work Plan for Site 17.

Through a copy of this letter, the RTCs are being provided to the EPA and MEDEP. Electronic versions of these documents have been previously transmitted. Once EPA and MEDEP have completed review of the enclosed RTCs, the Final Remedial Investigation Work Plan will be prepared and submitted to the Brunswick Team.

If you have any questions or comments, please contact the Navy's Remedial Project Manager, Todd Bober at (215) 897-4911.

Sincerely,



Paul F. Burgio  
BRAC Environmental Coordinator  
By direction of BRAC PMO

Enclosure:

Responses to Comments from EPA and MEDEP

Copy to:

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**Response to Comments  
From EPA on the  
Draft Final Site 17 Work Plan –UFP SAP**

**General Comment**

1. EPA reviewed the November 7-9, 2007 Site 17 DQO meeting notes when reviewing this work plan. EPA found that the work plan accurately reflects the agreements reached during the 2 ½ day meeting. EPA commends the Navy for involving all NAS Brunswick stakeholders in the development of this document and using the DQO process to formulate a quality work plan that when implemented, will meet project needs.

Response: Comment noted

2. **Page 2-14, 1<sup>st</sup> bullet:** EPA's recollection from the DQO meeting was that professional judgment would be relied on as well when evaluating ground water metals concentrations.

Response: Concur and professional judgment will be added.

3. **Page 3-8, Section 3.1.8.1:** Please attach a diagram of the equipment set-up to the work plan. Also, please note that the turbidity samples are collected prior to the flow-through-cell. Also, this section states that a Horiba U-22 and a separate turbidity meter will be used. Please identify the turbidity meter.

Although the Navy is probably already aware of this, small diameter bladder pumps now exist that can be used in 1" diameter monitoring wells. The use of either peristaltic or small bladder pumps for the planned work described in this work plan is acceptable.

Response: The diagram is attached. It is the Navy policy to use the industry standard for collection of groundwater samples. The Navy does collect turbidity samples prior to the flow-through cell.

4. **Page 4-6, 4.3 Project Action Limits:** The second paragraph states that some of the action limits cannot be reached and this "issue will be addressed in the discussion of data usability". This Plan does not include a section on data usability. Please add the section on data usability to the Work Plan.

Response: Worksheet #37 of the UFP SAP (Appendix A) includes the usability assessment.

5. **Page 4-11, Field Instruments and Equipment:** EPA requests that field water quality meters (pH, dissolved oxygen, etc.) be calibrated according to the procedures provided in Appendix E of the Base-Wide Quality Assurance Project Plan (QAPP) for the Long-Term Monitoring Program (January 2006). The navy, ME DEP and EPA invested considerable time and effort to develop this Base-Wide Plan to ensure consistency for all NASB sites and it was expected that all work plans developed for NASB, regardless of which Navy consultant was responsible for the preparation, would reference this Base-Wide QAPP when possible. Unless the specific manufacturer's procedure for a field instrument is equivalent to the Base-Wide QAPP procedure, filed calibration must be completed according to Appendix E of the base-Wide QAPP. A critical aspect of whether a calibration procedure is equivalent to the Base-Wide QAPP procedure is that it uses, at a minimum, two standards to bracket the measurement range. The only exception to this is the ORP measurement which uses one standard (Zobell standard).

Response: The Navy requires that all relevant information for each study be included in a site specific UFP-SAP. It is standard practice for TtNUS to calibrate equipment using the manufacturer's procedures. The Navy will incorporate the Basewide QAPP procedures as appropriate into this SAP.

6. **Page 5-24, Section 5.2.2.2:** "Food ingestion rates" are commonly reported in units of g/g-day wet weight, \*not dry.\* Note this in EPA's exposure factors handbook Volume I, page 1-22 and each table by receptor species (EPA 1993 at <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=2799>). The reason is predation data from both field and captive prey consumes studies is on fresh weight basis. Before these data in EPA (1993) can be used, they are converted to dry weight using "%H2O" (% moisture) data reported in Table 4-1 on page 4-13 in

EPA (1993) or elsewhere since "chemical concentration in food" and "chemical concentration in surface soil" analytical data are always reported on a dry weight basis. Finally, bioaccumulation factors are unit-less. It is true they are usually derived using analytical lab data that is nearly always dry weight: dry weight basis. If site-specific prey tissue data are used please be sure they are in unit dry weight.

Response: The exposure factors (food ingestion rates and soil/sediment ingestion rates) and bioaccumulation factors will be on a dry-weight basis. Note that some updates will be made to the exposure factors presented in the work plan based on changes to the incidental soil ingestion rates presented in the most recent USEPA Ecological Soil Screening Levels. The estimated tissue concentrations will also be on a dry-weight basis by using dry-weight bioaccumulation factors. The sources of all the exposure factors and bioaccumulation factors will be presented in the ERA and presented in the SAP.

7. **Table 5-1:** While the qualitative approach of assuming risk from inhalation of groundwater contaminants through showering/bathing is equal to risk from ingestion of these groundwater contaminants is still being used at some sites, this qualitative risk assessment should not be factored in to the derivation of groundwater cleanup levels. EPA recommends including in the work plan use of available showering models to quantify risks from inhalation of groundwater contaminants. One commonly used model is the Foster and Chrostowski's model (Foster, 1987 and Foster, 2001). Another model is Schaum et al, 1994. Risks generated from these models could be considered in deriving groundwater cleanup levels at the site.

Response: The Navy will use the Foster and Chrostowski Model to evaluate the potential inhalation of volatile organic chemicals while showering.

8. **Page 6-1, Reports:** The report should include in addition to the items listed: field notes, filed sheets, and data validation summary sheets.

Response: This information will be included in an appendix to the report.

9. **Appendix A – Worksheet #22 Field Equipment Calibration, Maintenance, Testing and Inspection Table:** For the quality meter, the Acceptance Criteria is listed as "manufacturer guidance". The acceptance criteria are the criteria that meet the objective of the project. It may or may not be the same as the manufacturer specifications. Therefore, the acceptance criteria need to be described in the Table.

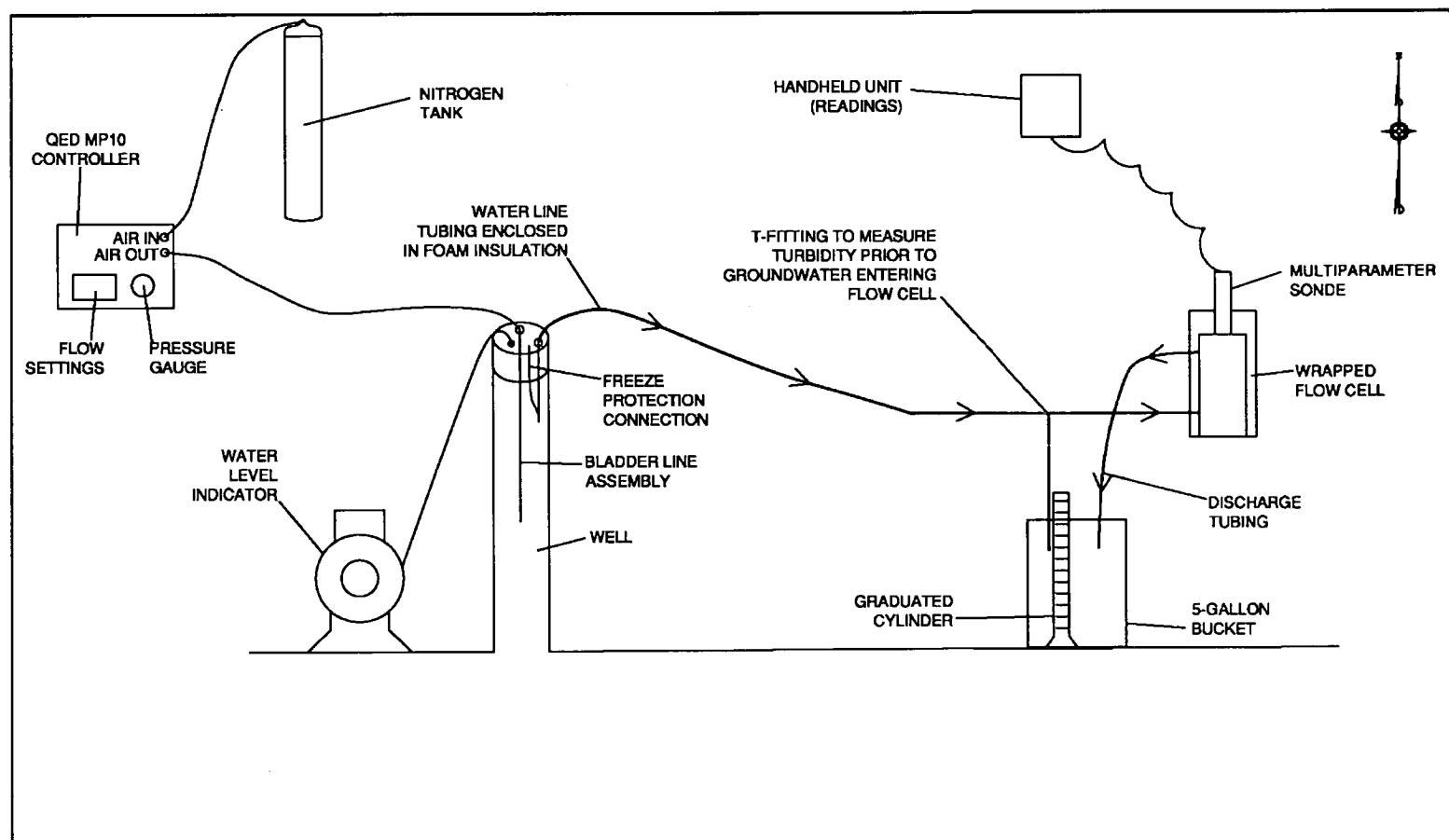
Response: The actual criteria will replace the words manufacturer's guidance.

10. **Appendix A – Worksheet #23 Analytical SOP References Table:** For the analysis of Pyrethrin and Rotenone, the worksheet list APPL Inc. SOP ANA8081A for the analysis. However, SOP ANA8-8081A does not include these pesticides will be analyzed and include in the analytical method their quantitation limits.

Response: The method for each specific compound will be included in worksheet 15. The analysis for pyrethrin will be 8081 and Rotanone will be 8321.

11. **Appendix C – Horiba U-10 Water Quality Checker:** This form does not agree with Section 3.1.8.1 (Groundwater Sampling) that states that a Horiba U-22 multi-parameter meter along with a separate turbidity will be used. Section 3.1.8.1 and Appendix C need to agree.

Response: concur – correction will be made.



**Response to Comments  
From Maine DEP on the  
Draft Final Site 17 Work Plan –UFP SAP**

**General Comments:**

1. Overall the Work Plan/Sampling and Analysis Plan (SAP) incorporated the decisions made at the Data Quality Objectives (DQO) meeting in November 2007. (No response required.)
2. MEDEP supports comments in the USEPA letter dated February 21, 2008 regarding this Sample Analysis Plan, in particular that calibration criteria and sample methods should meet the requirements of the Basewide Quality Assessment Project Plan (QAPP). If rental field instrumentation differs from what is listed on the sample field forms or elsewhere in the SAP, that information must be noted in the field and included in the final report.

Response: The Navy requires that all relevant information for each study be included in a site specific UFP-SAP. It is standard practice for TtNUS to calibrate equipment using the manufacturer's procedures. The Navy will incorporate the Basewide QAPP procedures as appropriate into this SAP.

3. There were a few cases where the number of borings or samples listed was not consistent from section to section of the document. Please check Section 3.1.3.1 and SAP Worksheets 17 and 18 for consistency.

Response: Concur – corrections will be made.

4. Please update the Navy personnel in Section 1.3 and worksheets 3, 5, 6, and 9.

Response: Concur – except for work sheet 9 with lists actual attendees at the scoping meeting.

5. Please change Building 95 or Building 95 site to Site 17 on page 2-8, section 2.5.1; page 5-3, Section 5.1.1.1; page 5-7, section 5.1.2.1; and page 5-8 section 5.1.2.3

Response: Concur– corrections will be made.

6. To maintain consistency with previous discussion regarding well naming conventions, MEDEP suggest the new wells be named "MW-17-101" or something similar.

Response: Concur – In section 4.4.2 the sample designation states the sample identifier will be S17 for Site 17.

**Specific Comments:**

7. Section 1.0 Similar to the discussion in the DQO Meeting Notes, there needs to be a clear discussion of the use of the UFP-SAP Worksheets in this Work Plan, including how and why they are relevant and how they will be used during this project. Please indicate in instances where the text and Worksheets differ which would take precedent.

Response: As stated in the DQO meeting all work plans, Quality Assurance Project Plans, and Sampling and Analysis Plans must be submitted in the UFP-SAP format that includes the 37 worksheets. As stated by the Navy RPM at that time, since this work plan was initially submitted prior to the October 1, 2007 deadline it could be submitted as a hybrid work plan

and worksheets. Both the worksheets and text should be identical in requirements. In the future all UFP-SAPs will just include the 37 worksheets and the text will be minimal.

8. Page 2-1, Section 2.1, para 2: Please revise the description of the Site to include the area south of Avenue B beyond the former railroad tracks where contaminated soil was removed and reburied. Also revise on Page 2-12, Section 2.5.4, para 1:

Response: concur – the following text will be added:

During the October 1994 excavation, contaminated soil immediately south of Avenue B was excavated and then placed in a 6-inch layer within a rectangular area, or “soil strip”, of previously excavated material south of Avenue B. This 6-inch layer of soil was then covered with 2 feet of common fill during site restoration.

9. Page 2-4, Section 2.2.2, last para: Please include in the text that the 135 mg/kg subsurface soil Preliminary Remedial Guideline (PRG) was developed to be protective of the construction worker.

Response: The text will be revised as follows: “a 135 mg/kg PRG developed for protection of construction workers exposed to subsurface soils...”

10. Page 2-5, Section 2.2.2 2<sup>nd</sup> para. Please include in the text that TCL VOCs and SVOCs were not detected in the groundwater sample collected from the site.

Response: concur – the text will be revised.

11. Page 2-6 Section 2.4.

a.) The Site Conceptual Model needs to be discussed in greater detail in the text. For example the text needs to define how “incomplete”, “potential” and “complete” pathways were determined.

Response: concur – the text will be revised to include a discussion of incomplete, partial, and complete pathways.

b.) Figure 2-4 needs to be revised to be consistent with the Exposure Scenarios presented in Table 5-1 (or, based on these comments, the Exposure Scenarios that will ultimately be evaluated in the risk assessment). Figure 2-4 does not include the Construction or Industrial Worker, does not include inhalation of groundwater or particulates, and does not include surface soils as a “source media”. In addition, it appears that the chart of potential receptors is not properly aligned.

Response: Figure 2-4 presents a general conceptual site model for Site 17. Separate figures depicting the conceptual site models will be prepared as part of the human health and ecological risk assessments. The additional CSM will be added to the SAP.

12. Page 2-8, Section 2.5, Project Quality Objectives, final paragraph: The Discussion Summary Sheets are listed in Appendix F rather than G as stated, please revise.

Response: concur– corrections will be made.

13. Page 2-8 Section 2.5.1 last para: Explain the derivation of the PRGs i.e., that the 0.5 mg/kg is based on ecological risk and the 135 mg/kg is based on human health risks.

Response: The words “(based on ecological risks)” will be added after the words “surface soils” in the referenced sentence and the words “(based on human health risks)” will be added

after the words "subsurface soils" in the referenced sentence. The PRGs were developed during the EE/CA and new criteria may be developed during the RI.

14. Page 2-9 Section 2.5.1 2<sup>nd</sup> para. last sentence: If it has been determined that the soils in this strip need to be removed "due to regulatory requirements" please provide some additional text identifying or detailing these regulatory requirements.

Response: This issue has been discussed at several meetings and has been stated that RCRA is the regulatory driver.

15. Page 2-9, Section 2.5.2 Action 1: This section should be rewritten to indicate that if there is an unacceptable risk the decision to proceed with a remedial or removal action will be based on the criteria presented in the National Contingency Plan. If a removal action is deemed appropriate it must then be determined if it should be "emergency", "time critical" or non-time critical".

Response: The section will state if there is an unacceptable risk the decision to proceed with a remedial (Feasibility Study) or removal action will be based on the criteria presented in the National Contingency Plan. It will also be determined if the removal action is time critical or non-time critical.

16. Page 2-10, Section 2.5.2, Action 2: The word "delineated" needs to be defined or this Action clarified. It could be inferred from the text that samples will be collected and analyzed until all compounds are present at concentrations below their respective detection limits.

Response: Delineated in this sentence is defined as detected. The intent is to sample until concentrations are below any action levels or consensus from the stakeholders.

17. Page 2-10, Section 2.5.3, Step 3:

a.) Please be consistent in the use of the terms RBCs, PALs, PQLs etc. Please refer in this section to the PALs as "screening RBCs"

Response: concur – There is some confusion since:

The risk based criteria (RBCs) which include human health and ecological criteria are used to develop the concentration shown in the worksheets. The UFP worksheets refer to this concentration as the project action limit (PAL). The purpose of the RBC or PALs is to determine the project quantitation limit that the laboratory must meet. The project quantitation limit has been set as one third of the PAL.

b.) 2<sup>nd</sup> para, last sentence. Worksheet 17 is titled "Summary of Proposed Phase 1 Soil Borings" and does not include the details of the "analyses to be performed for each matrix...". Please correct.

Response: Worksheet 18 and 19 include those details

c.) last para. Please provide more information on the "fate and transport modeling" that is being proposed. It may be premature to scope out groundwater modeling prior to evaluating the results of the groundwater samples. The magnitude of groundwater contamination may not warrant such an effort.

Response: No numerical modeling is planned at this time. This statement refers to analytical fate and transport evaluations. Modeling will be removed from the text.



18. Page 2-11, Section 2.5.3, Question 1:

a.) 1<sup>st</sup> para, last sentence: The criteria used to select Contaminants of Potential Concern (COPCs) should be referred to as "Screening RBCs" and not defined as the Project Action Limits.

Response: The last sentence in the first paragraph will be deleted.

b.) 2<sup>nd</sup> para, first sentence: Please revise the first sentence. Project Action Limits, as defined in this draft report, are set at the screening risk based concentrations (RBCs). These RBCs are not "benchmarks that decision-makers use as the basis for choosing among alternatives." Rather RBCs (or the USEPA Region IX Preliminary Remediation Guidelines (PRGs)), are used for site "screening" and were developed to streamline and standardize the risk assessment process. As stated in the Region 9 PRGs Users' Guide, "PRGs are not *de facto* cleanup standards and should not be applied as such." (USEPA Region 9 Website located at <http://www.epa.gov/region09/waste/sfund/prg/index.html> ). There are other non-risk based concentrations that may be used for "choosing among alternatives" and include ARARs such as MCLs.

Response: Agree, however, the Region IX PRGs may not be the PALs for every chemical; ecological-risk based numbers may in fact be lower and therefore would serve as the PAL.

c.) 2<sup>nd</sup> para: "Project Action limits are set at the lowest matrix-specific human health or ecological risk-based ...."

The selection of COPCs must be conducted separately for the Human Health and Ecological Risk Assessments. The selection of COPCs for the Human Health risk assessment must be based on criteria developed to be protective of human health and should not be based on ecological criteria. Please revise the text.

Response: The selection of COPCs will be done separately for the human health and ecological risk assessments. The first sentence in Question #1 is "To determine whether there is unacceptable current or future risk to human or ecological receptors at Site 17, ecological and human health risk assessments will be performed following the protocols in Section 5."

d.) bullet 2: MEDEP Remedial Action Guidelines were develop as clean up numbers and are not conservative enough to be used as screening RBCs. Please remove these criteria from the selection process. (Also revise on page 2-14, Note; Page 4-6, Section 4.3; page 5-4, Section 5.1.1.1; and page 5-6, Section 5.1.1.4.)

Response: Those changes will be made.

e.) bullet 3: The EPA soil screening levels for migration from soil to water are not appropriate criteria to select COPCs for the direct contact and incidental ingestion routes of exposure. Please remove these criteria from the selection process.

Response: The EPA soil screening levels for migration from soil to water are used to identify whether there is a potential for chemicals leaching from soil to adversely impact groundwater. Therefore they should remain in the COPC selection process.

f.) bullet4: Please provide the hierarchy and a citation of the various proposed ecological screening benchmarks in the text. These criteria will be used to select only the ecological COPCs.

Response: The hierarchy and citations of the ecological screening benchmarks is presented as a footnote to Worksheet 15a.

19. Page 2-12, Section 2.5.3, Question #2:

a.) Please delete references to "background" from the selection process.

Response: Question #2 discusses delineating the nature and extent of contamination. In determining nature and extent it is important to distinguish chemicals that are present as a result of site activities and chemicals that are naturally occurring. The following sentence will be after the first sentence "Chemicals which are present within background levels and related to anthropogenic activities will be identified but will not be eliminated from the evaluation." At the end of the HHRA and step 3a ERA, risks will be presented for only those chemicals that are site-related. Risk from background will be calculated but it will be discussed in an uncertainty section or appendix. The conclusions of the HHRA and Step 3a ERA will only present risks for those chemicals which are site-related."

b.) Please provide a list of the chemicals for which the laboratory DL or MDL exceeds the PQL. This paragraph implies that the Navy will continue to sample soil and groundwater until all compounds are detected at concentrations below the MDL. Is this correct?

Response: The sentence will be changed to state "In this case, the detection limit will be the MDL."

20. Page 2-12, Section 2.5.3, Question #3: The last sentence of Question #3 implies that an "appropriate action" for the soil strip is to be determined. However, on Page 2-6 and Page 2-9 the text states that "Removal of the contaminated soil in this soil strip is mandatory due to regulatory requirements." Please correct this discrepancy.

Response: the last sentence will state an appropriate removal action for the contaminated soil strip will be identified.

21. Page 2-12, Section 2.5.4 2<sup>nd</sup> para, 3<sup>rd</sup> sentence: The text implies that the Navy will continue to sample soils and/or groundwater until "contamination is not found". Does the Navy really propose sampling until all compounds are present at concentrations below their respective MDLs? The Navy may want to perform the Phase I analytical then discuss the data with stakeholders before deciding whether additional data is necessary. Please clarify.

Response: Agree The text will be changed to The intent is to sample until concentrations are below any project action levels or consensus from the stakeholders.

22. Page 2-13, Question #1, Assessment of Risk,

a.) 1<sup>st</sup> sentence. Change project action limit to "screening RBC".

Response: Agreed, the sentence will be revised as follows: "The basic decision rule will be that if the maximum concentration of any chemical in any groundwater or soil sample exceeds its *screening RBC*..."

b.) 2<sup>nd</sup> para: The text should be changed to state that the "Navy, in conjunction with the EPA and MEDEP and consistent with the NCP will determine whether a remedial or removal action is best suited for this site."

Response: Concur

c.) bulleted text. These bullets need to be consistent with the criteria specified in Subpart E of the NCP for conducting a remedial or removal action.

Response: Concur

d.) last sentence. Please insert "of" after "level".

Response: Concur

23. Page 2-13 Question #2, Groundwater: Please define "target compound" or change this term to "COPCs" if the "target compounds" are the COPCs identified after the screening of analytical data.

Response: target compound will be changed to COPC

24. Page 2-14, Section 2.5.4, Question 2, Bullets:

MEDEP notices that all the decisions for groundwater and soil are based on "greater than one-third of RBC and greater than..." and meeting notes indicated it should be "greater than one-third of the RBC or greater than..." with consideration of professional judgment..

Response: Concur text will be changed to or

25. Page 2-14, Soil, last para, last sentence: This sentence is inconsistent with earlier text stating that "removal of the contaminated soil in this soil strip is mandatory due to regulatory requirements" (see Pages 2-6 and 2-9). Please correct this discrepancy.

Response: Concur

26. Page 2-15 Decision Error Tolerance: Please elaborate on the conclusion that "the number of samples proposed in Worksheet #17 should be sufficient" when the statistical approach presented in Appendix F is appropriate for random sampling while the proposed sampling detailed in this Work Plan is biased sampling.

Response – "Many of the sample size formulae provided for simple random sampling (i.e., the sample size formula for estimating a mean provided in Chapter 4) can be used for systematic [i.e., grid] sampling as long as there are no strong cyclical patterns, periodicities, or significant spatial correlations between pairs of sample locations not introduced as part of the grid or systematic process."

The reference in EPA (2002) to Chapter 4 is an error and it should be a reference to Chapter 5. In Chapter 5 of EPA (2002) the following statement is made: "Sample size formulae for achieving specified power for hypothesis tests are in Section 3 of *Guidance for Data Quality Assessment (QA/G-9)* (EPA, 2000a)."

The cited Data Quality Assessment guidance (2000a) has been replaced with EPA (2006a). Section 3 of this guidance (EPA, 2006a) is similar to, and consistent with, the guidance (EPA, 2006b) on which the number of sample calculations was based for the Site 17 project. Therefore, no change has been made to the SAP in response to this comment. However, if the state has a different calculation in mind that is appropriate for this application, NAVFAC will consider its use.

EPA, 2002. Guidance on Choosing a Sampling Design for Environmental Data Collection for Use in Developing a Quality Assurance Project Plan EPA QA/G-5S, United States Environmental Protection Agency, December.

EPA 2006a Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S, United States Environmental Protection Agency, February

EPA, 2006b. Guidance on Systematic Planning Using the Data Quality Objectives Process EPA QA/G-4, United States Environmental Protection Agency, February

27. Page 2-15 Section 2.5.7 Last Bullet. Please clarify the criteria that will be used to determine if additional sampling is required. As noted in earlier comments, previous text has implied that "delineation of contamination" will continue until soil/groundwater contaminant concentrations are less than "1/3 the screening RBC" or "less than the MDL". This may be an overly conservative criteria as it is likely that the final remediation goals will be greater than 1/3 the screening RBC or the MDL. The Navy may want to discuss the Phase I data with stakeholders and decides what additional data is needed.

Response: Concur and the text will be changed The intent is to sample until concentrations are below any project action levels or consensus from the stakeholders.

28. Page 3-2, Section 3.1.3.1, Soil Boring Samples:

a.) A number of the proposed soil borings are on the edge of the previously excavated area (SB-112, 114, 117, 119, and 126). Some are listed as outside the excavation so the first sample will be 0-1 foot and some are listed as inside the excavation so the samples will be taken at the 1-3 feet bgs. The Navy must clearly state in the workplan how it will ensure that the soil boring is taken in the correct location (inside or outside the historic excavation) so that the correct sample depth is collected. (Also see comment 29 below.)

Response: The figure is an approximation of the actual removal action and the text on page 3-3 section 3.1.3.1 defines the sampling protocol.

b.) Please clarify whether one or two of the borings will be extended to 15 feet, and revise here and Appendix B, Worksheet 18, as needed.

Response: The text in section 3.1.3.1 will be changed to one location.

c.) Also this section does not discuss the soil borings that will be taken in areas not previously excavated. Please add a brief overview.

29. Page 3-3, bullet 1 – The field log must also note how the interval was identified, either by visual change in stratigraphy or by identification of the geotextile marker.

Response: Concur

30. Page 3-5, Section 3.1.4:

a.) Please add a prefix of 17 to the monitoring wells (i.e., MW-17-101) or something similar to prevent to replication of monitoring well numbers at the Base.

Response: Concur – See response to comment 6.

b.) Please revise the text to reflect the fourth monitoring well.

Response: Concur

31. Page 3-11, Section 3.1.10.2: "The well development and purge water will be containerized for potential disposal at the onsite treatment plant."

The treatment plant is designed to treat VOCs in groundwater not pesticides; other arrangements for the Liquid IDW will have to be made. Please revise, as necessary.

Response: The IDW will be analyzed and if applicable will be disposed at the onsite treatment plant or an appropriate offsite location.

32. Page 3-12 Section 3.2, Analytical Tasks: Please provide a discussion of the Analytical Tasks. (Page 9, Worksheet 14 in Appendix A references back to this section.)

Response: The sentence will be changed to refer reader to the appropriate worksheets.

33. Page 4-3, Section 4.1.3, Sensitivity and Quantitation Limits:

a.) para 2: If the screening level is lower quantitation limit (QL) then a detection down to the method detection limit (MDL) must be reported. Please revise.

Response: The organic non detected results will be reported to the QL due to the frequent matrix interferences detected in environmental samples.

b.) para 3: Please change Project Action limits to "screening RBCs".

Response: As we discussed the Navy is going to provide a definition of project action limit and risk based criteria.

c.) Please identify the pesticides that can not be detected at 1/3 their ecological screening RBCs.

Response: The chemicals that cannot be detected at 1/3 of their screening level will be highlighted on Worksheet Table 15a. Note that it is most of the pesticides and dioxin.

34. Page 4-6 Section 4.3. Please revise this section based on comments in 18.a. relating to PALs, PQLs and RBCs.

Response: See comment 18

35. Page 4-10, Section 4.4.2, Sample Designation, para 1: "Duplicates: For groundwater ..." In keeping with the groundwater samples designation shown on page 4-9 the designation for the duplicate should be S-17-GW-MW-DUP01.

Response: Concur

36. Page 4-14, Section 4.9.2, Corrective Action: Please add who notifies EPA and MEDEP to this section.

Response: Text will be added to indicate that the Navy will notify the EPA and MEDEP.

37. Page 4-18, Section 4.10, Data Review Procedures, and Appendix A Worksheet 36, page 89: The text indicates a Tier III validation will be performed on 10 % of the data, while 90% receive a Tier II validation. The Worksheet indicates only the Tier II validation. Please revise as needed and indicate what level of validation will be performed.

Response: Concur – Work sheet 36 will be revised.

38. Page 5-1 Section 5.0, Risk Assessment Methodologies:

a.) Please provide a brief summary of the regulatory framework within which this risk assessment is being conducted.

Response: Text will be added that the risk assessment will be performed under the regulatory framework of CERCLA.

b.) Please be consistent throughout the Work Plan and Tables in regards to the number system for Phase I and II vs. Phase 1 and 2 and Region 9 vs. Region IX.

Response: Agreed.

39. Page 5-2, Section 5.1.1, Data Evaluation:

a.) Please include a discussion in this section how data flagged "J", "U" and "R" will be addressed.

Response: The following text will be added: "In accordance with USEPA risk assessment guidance analytical results qualified as rejected, R, during the data validation process will not be considered because of their potential unreliability. The reported detection limit will be used for "U" qualified data. The reported analytical result will be used for "J" qualified data."

b.) Please include a discussion in this section how compounds for which there is insufficient toxicity information will be evaluated.

Response: The following text will be added to the end of Section 5.1.1.1. "Because of the lack of toxicity criteria, risk-based COPC screening levels are not available for some compounds. Surrogates will be selected for these chemicals based on similar chemical structures." If appropriate surrogates can not be identified then these chemicals will be qualitatively evaluated in the uncertainty analysis."

c.) Please include a discussion in this section how essential nutrients (i.e., Mg, Ca, K etc) will be evaluated.

Response: The following text will be added to the end of Section 5.1.1.1. "The essential nutrients, calcium, magnesium, potassium, and sodium will not identified as COPCs. These inorganic chemicals are naturally abundant in environmental matrices and are only toxic at high doses. In addition, USEPA Region I does not advocate evaluating exposures to aluminum, cobalt, copper, and iron since the toxicity values for these compounds are based on concentrations needed to protect against a deficiency of the compound, rather than on quantitative estimates related to the hazard posed by overexposure to the compound (USEPA, 1999). Therefore, aluminum, cobalt, copper, and iron will not be identified as COPCs.

d.) The bulleted "components" and subsection headers should be consistent.

Response: Comment noted.

40. Page 5-3 Section 5.1.1.1, Toxicity Screen:

a.) Please delete all references to screening against "background levels".

Response: Disagree. It is important to identify those chemicals that are present at naturally occurring levels and that are not site-related. Chemicals exceeding screening criteria but within background levels will be identified during the COPC selection process but will not be eliminated from the risk assessment at this point. These chemicals will be carried through the risk assessment. Then in the risk characterization section the risks associated with the chemicals identified as being within background levels will be discussed. Section 5.1.1.2 will be renamed "Comparison to Background" and the following text will be added to the end of the section. "No chemicals will be eliminated as a COPC on the basis of background. The risks associated with chemicals identified as being present within background levels will be discussed in the risk characterization section."

Also the first sentence in the second paragraph will be modified as follows: "In general, a chemical is selected as a COPC and retained for further quantitative risk evaluation if the maximum detection in a sampled medium exceeds the lowest risk-based concentration."

b.) Please include a discussion in this section detailing how COPCs for the inhalation of fugitive dust and dermal absorption of groundwater routes of exposure will be determined. Please identify the appropriate screening RBCs that will be used for each of these pathways.

Response: The selection of COPCs for the inhalation of fugitive dust is discussed on page 5-4 in the section of Screening Levels for Soil. The first sentence in the second paragraph in this section will be revised as follows: "Maximum chemical concentrations in soils will also be compared to federal soil screening levels for migration from soil to air (SSL); chemicals detected at a maximum concentration exceeding the SSL will be selected as COPCs for the *inhalation of fugitive dust exposure pathway*."

There are no screening criteria available for selecting COPCs for only dermal absorption of groundwater. In accordance with USEPA guidance the screening levels developed for ingestion of tap water will be used to also select COPCs for dermal absorption of groundwater. As indicated in RAGS Part E, Exhibit B-3, for most chemicals exposures through ingestion of water are more significant than those exposures through dermal contact with water. Note that if a chemical is retained as exceeding a screening level based on ingestion of water it will also be evaluated for exposures through dermal contact with water in the risk assessment.

c.) Compounds can not be excluded as COPCs based on a screening against background levels but must be retained and carried into the quantitative risk assessment. The Navy can discuss the impact that exposure to these "background" contaminants has on the risk estimate in a section after the presentation of cumulative site risks (i.e., uncertainty section).

Response: See response to comment 40a.

d.) 2<sup>nd</sup> para. The "medium-specific tables" need to include the minimum and maximum detected concentration, frequency of detection, location of the maximum detected concentration, the screening concentration and risk based concentration (with appropriate reference) and rationale for selection or elimination as a COPC.

Response: The last sentence in the second paragraph will be modified as follows:  
"Medium-specific tables *in RAGS Part D Table 2 format* summarizing the selection of COPCs will be included in the risk assessment.

e.) 3<sup>rd</sup> para. Please change Building 95 to Site 17, refine your reference to RAGs, and delete reference to SSLs based on migration from soil to groundwater.

Response: The first sentence will be modified as follows: "Several screening criteria will be used to identify COPCs for *Site 17*."

The first sentence in the last paragraph on page 5-3 will be revised as follows: MEDEP RAGs and MEGs will also be used to select COPCs."

As previously noted the screening criteria for migration from soil to groundwater is not used to select direct contact COPCs but to identify whether COPCs in soil have the potential to impact groundwater.

f.) Please be aware that Maine MEGs are set at an ICLR of  $10^{-5}$  and as such will need to be modified to reflect a  $10^{-6}$  risk level. To avoid confusion this should be stated in the text.

Response: The MEGs are based on USEPA MCLs in addition to carcinogenic and noncarcinogenic health effects. While it is possible to determine which MEGs are based on MCLs it is not possible to determine whether the MEGs are based on carcinogenic or noncarcinogenic effects. Therefore it is not possible to modify the MEGs to reflect a  $10^{-6}$  risk or HI of 0.1.

41. Page 5-4 Section 5.1.1.1, Toxicity Screen

a.) Please remove references to MEDEP RAGs. See comment 18.d above

Response: See response to comment 18d.

b.) Screening Levels for Soils. As stated in an earlier comment, please indicate how COPCs for fugitive dust will be determined.

Response: See response to comment 40b.

c.) Screening Levels for Groundwater. Please revise the first sentence as the Navy will not be using the "same screening levels..."

Response: See response to comment 40b.

d.) Screening Levels for Groundwater. As stated in an earlier comment, please indicate how COPCs for the dermal absorption of contaminants from groundwater will be determined.

Response: See response to comment 40b.

42. Page 5-4, Section 5.1.1.2, Background Screen:

a.) "Background concentrations are concentrations that would exist in the absence of influence from site operations."



Site operations is the Base not just Site 17, therefore must be areas of the Base unaffected by Base operations in addition to regional and local concentrations.

Response: The sentence will be revised as follows: "Background concentrations are concentrations that would exist in the absence of influence from *Base* operations. *Base* operation include several anthropogenic activities that produce non-point, non-site specific chemical concentrations

b.) The Navy can certainly determine background concentrations for NAS Brunswick using the methodology stated in this section but please be reminded that the MEDEP will not allow chemicals to be excluded as COPCs based on a screening against background concentrations. Please remove all references to screening against background concentrations in this Work Plan.

Response: See response to Comment 40a. Risk from background and site (cumulative) risk will be presented in the uncertainty section of the risk assessment. Per the Navy's policy, only site-related risk will be discussed in the risk characterization and will be use to make a decision.

43. Page 5-6 Section 5.1.1.4, Decision Rules...:

a.) Please specify the additional sources of toxicity information that will be used to identify surrogate screening RBCs. The Navy should submit to USEPA and MEDEP the proposed surrogate concentrations prior to conducting the risk assessment.

Response: Surrogates will be selected from the same set of criteria which are being used to develop the screening RBCs.

b.) As stated, the MEDEP will not allow chemicals to be excluded as COPCs based on screening against background concentrations. These COPCs must be carried into the quantitative risk assessment. The Navy can discuss the impact that exposure to these "background" contaminants has on the risk estimate in a section after the presentation of cumulative site risks (i.e., uncertainty section).

Response: See response to Comment 40a.

44. Page 5-7 Section 5.1.1.4. 1<sup>st</sup> para last sentence. This sentence states that "COPCs will not be selected on the basis of ARARs or groundwater protection SSLs" and is inconsistent with the information presented in the Worksheet Table 15a, Determination of Project Action Limits, Soil Samples. Worksheet 15a includes soil concentrations for many chemicals in columns under the Region 9 Preliminary Remediation Soil Heading "DAF 20" and "DAF 1". These columns contain soil concentrations that are based on the protection of groundwater assuming a dilution attenuation factor of 20 and 1. The residential exposure scenario is based on direct contact and ingestion exposure to soils. Soil COPCs for this scenario should not be based on groundwater protection. As such, the Navy needs to delete the groundwater protection SSLs in Table 15a and remove references to the groundwater protection SSLs in the text.

Response: The criteria included on Worksheet 15a is used to select method detection limits for the various analytes. While the SSLs for migration from soil to groundwater are not used to identified COPCs for direct contact exposures they are used to identify the potential for soil to impact groundwater and therefore should be included in the worksheet.

45. Page 5-8, Section 5.1.2.3, Potential and Current...:

a.) Regarding exposure scenarios, please provide a more detailed description of each receptor and the likely activities that would result in potential contaminant exposure. For example, it is unclear how the Industrial Worker and Facility Personnel would be exposed to soils and the difference between these receptors. This information is necessary to evaluate some of the proposed exposure parameters.

Response: The typical industrial worker/facility worker refers to the same receptor. Facility worker will be deleted from this paragraph to avoid confusion. The exposure assumptions presented for the industrial worker are the standard USEPA default exposure assumptions. See appendix D.

b.) Trespassers/Recreational Users. Please note that MEDEP uses the interval of 0-1 feet to evaluate exposure to surface soils.

Response: Section 3.1.3.1 states that surface soil samples will be collected from 0-1 feet so the text will be revised accordingly.

c.) Trespasser Scenario. Appendix D Table 4.9 RME and CT are for the Adult Trespasser. This receptor is not included in the text.

Response: The first sentence will be revised as follows: "A plausible receptor (older child age 6-17 years old *or adult*) under current and future land use."

46. Page 5-8, Section 5.1.2.3, Potential Current and Future Receptors..., para 1: The boundaries to the northwest and the southeast are unknown. However it is known that a removal action was performed south of Avenue B to the former railroad tracks, so the former railroad tracks should be used as an approximate boundary to the southeast. Please revise.

Response: Concur – The text will be revised to include the south of Avenue B to the former railroad tracks.

47. Page 5-9, Section 5.1.2.3, Future Residents: Please add air, inhalation pathway.

Response: Agreed. The second sentence will be revised as follows: "It is assumed that a hypothetical resident may be exposed to surface and subsurface soils (incidental ingestion; dermal contact; and *inhalation*) and groundwater (ingestion and dermal contact.)"

48. Page 5-9 Section 5.1.2.3 last para. This information needs to be moved up into the selection of COPCs. See comment 40.b above.

Response: See response to comment 40b.

49. Page 5-10, Section 5.1.2.4, Exposure Point Concentrations: Please describe how the EUs for soils will be determined. Will all depths/concentrations be considered at a horizontal location, or will the EU be broken up by surface/subsurface or by depth intervals?

Response: The following text will be added after the fourth sentence in the second paragraph. "For example, if contamination is random across the site and there are no hot spots then one EU will be used for the entire site. If there are areas of distinct contamination then separate EUs will be defined for each distinct area of contamination. As discussed in Section 5.1.2.3 some receptors are only exposed to surface soil while other receptors are exposed to both surface and subsurface soil. Therefore, two EPCs will be calculated for each EU, one for surface soil and one for surface soil and subsurface combined."

50. Page 5-11 Section 5.1.2.4 Calculations of..., 2<sup>nd</sup> bullet. Please include in the text that the maximum detected concentration will be used as the EPC when the 95% UCL exceeds the maximum detected concentration.

Response: USEPA ProUCL guidance recommends that the maximum detected concentration should not be used as the EPC when the 95% UCL exceeds the maximum detected concentration. In these cases ProUCL recommends that an alternate 95% UCL computation be used as the EPC. The text in the second paragraph will be revised as follows: "EPCs will be calculated following USEPA's Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites (USEPA, 2002a) using USEPA's ProUCL software (USEPA, 2007). In cases where the maximum detected concentration exceeds the 95%UCL alternative 95% UCL will be selected as the EPC in accordance with the ProUCL guidance."

51. Page 5-11, Section 5.1.2.4, Calculation of Exposure Point Concentrations: The risk assessment should include a summary of each data set used as inputs to the ProUCL calculations. The mean concentration, the standard deviation, the statistical distribution and calculated EPC should be included as an Appendix. For compounds having neither a normal nor lognormal distribution the most conservative (i.e. highest) non-parametric result (i.e., CLT, Jackknife, Standard Bootstrap, Bootstrap-t and Chebyshev) should be used as the EPC.

Response: The following text will be added to the end of the last paragraph in Section 5.1.2.4: "The distribution-based UCL and the rationale for selecting the EPCs will be presented in the RAGS Part D Table 3s".

52. Page 5-11 Section 5.1.2.5, Chemical and Intake Estimation:

a.) The CTE for all complete exposure pathways with the exception of the construction worker and older child trespasser must be included. The Appendix D tables include both the RME and CTE for each pathway. Generating quantitative risk estimates for both the CTE and RME provides a range of potential risks that is often helpful in making risk management decisions.

Response: Agreed. Risk estimates will be prepared for both RME and CTE scenarios. The last three sentences in the second paragraph in Section 5.1.2.5 will be deleted and replaced with "To provide a full characterization of potential exposure, both RME and CTE will be evaluated in the risk assessment."

- b.) The text, Table 5-1 and Figure 2-4 need to be consistent and Appendix D should only include those routes of exposure that are to be included in the risk assessment.

Response: Figure 2-4 is a general conceptual site model and is not intended to represent the exposure pathways that will be evaluated in the human health risk assessment. A separate conceptual site model will be prepared for the human health risk assessment that shows all exposures pathways that were considered for evaluation. See comment 11 b. Also we will not know which exposure pathways will be quantitatively evaluated in the HHRA until we have performed the COPC screening. It is possible that there will be no COPCs for a media or an exposure route.

Note that Table 5-1 lists only the complete exposure pathways that are being retained for quantitative evaluation. The human health risk assessment will also include RAGS Part D Table 1 which will list all complete and incomplete exposure pathways and rationale for their retention/elimination.

53. Page 5-12 Section 5.1.3, Toxicity Assessment:

- a.) The Toxicity Assessment must include the Chronic Oral RfD, Subchronic Oral RfD, CSF and URFs for each soil and groundwater COPC. If the inhalation of fugitive dust is included in this risk assessment the Chronic Inhalation RfD for the fugitive dust COPCs must also be included. Because the USEPA is currently reevaluating its approach to characterizing risk from less than lifetime (i.e., subchronic) inhalation exposure MEDEP will require that the long-term predicted fugitive dust air concentration be compared directly to the inhalation RfC. As such, the inhalation RfCs must be included.

Response: The following text will be added to the last paragraph in Section 5.1.3.1: "The toxicity values for the constituents selected as COPCs will be presented in RAGS Part D Table 5s' and 6s' for noncarcinogenic and carcinogenic chemicals, respectively."

- b.) Please include a discussion of the proposed method for evaluating potential risk from exposure to dioxin.

Response: The following text will be added to Section 5.1.3:

#### **5.1.3.3 Toxicity Criteria for Carcinogenic Effects of Dioxins/Furans**

If chlorinated dibenzo-p-dioxins (CDDs) and chlorinated-dibenzofurans (CDFs) are selected as COPCs, they will be evaluated using toxicity equivalence factors (TEFs) that relate to the toxicity of various congeners to the toxicity of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) (USEPA, March 1989). USEPA developed TEFs based on a variety of approaches including structure-activity relationships and available toxicological information. The equivalent oral CSF for these chemicals is derived by multiplying the CSF for 2,3,7,8-TCDD by the TEF. The World Health Organization (WHO) TEF values published in "The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds, (July 7, 2006) will be used in the risk assessment. "

- c.) The final Toxicity Assessment should include a list or table identifying the compounds for which there was insufficient toxicity information to conduct a quantitative risk assessment.

Response: The RAGS Part D Table 5s and 6s will contain all chemicals identified as COPCs including those chemicals for which no toxicity criteria is available.

54. Page 5-13 Section 5.1.3.1, Toxicity Criteria..., last sentence: These criteria are not "updated annually". The reference in Table 15a for the Region 9 PRGs is October 2004.

Response: The last two sentences in this paragraph will be revised as follows: "The USEPA Region III RBC table may also be used as a source of toxicity criteria. This table is updated semi-annually and reflects recent changes in IRIS and provisional toxicity criteria."

55. Page 5-15 Section 5.1.4.2, Interpretation of Risk...:

- a.) Please remove the word "typical" in the first sentence.

Response: The word "typical" will be deleted"

- b.) Please include a discussion of how exposure to lead will be evaluated. Because there is no RfD for lead, concentrations detected in soil should be qualitatively compared to the MEDEP Residential Guideline of 375 mg/kg and USEPA Interim Soil Lead Screening Concentration of 400 mg/kg.

Response: The following text will be added to Section 5.1.4:

#### 5.1.4.3 Risk Characterization of Lead

In addition to the quantitative risk evaluation described in the preceding paragraphs, lead (if selected as a COPC) will be evaluated using the USEPA Integrated Exposure Uptake Biokinetic (IEUBK) Model for lead. Exposure of adults (e.g., workers and recreational users) to lead will be evaluated by the adult exposure model presented in the following USEPA document: Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soils (USEPA, January 2003). The following paragraphs provide a brief overview of these models.

The IEUBK model is recommended by USEPA for the evaluation of childhood lead exposures assuming a residential land use scenario. The IEUBK is designed to estimate blood-lead levels in children (under 7 years of age) based on either default or site-specific input values for air, drinking water, diet, dust, and soil exposure. Studies indicate that infants and young children are extremely susceptible to adverse effects from exposure to lead. Considerable behavioral and developmental impairments have been noted in children with elevated blood-lead levels. The results of the IEUBK modeling are given in terms of the probability that exposed children will exceed a 10 ug/dL blood-lead level. This probability is typically compared to the USEPA goal of limiting the childhood risk of exceeding a 10 ug/dL blood-lead concentration to 5 percent. The OSWER screening level 400 mg/kg for lead for residential land use is based on the IEUBK model.

The USEPA TRW model focuses on assessing risks associated with non-residential adult exposures to lead in soils. The model was originally published to provide guidance on the calculation of soil clean-up levels based on protecting adults (specifically, women of childbearing age) using a conservative approach that relates the lead level in the environment with the blood-lead level of a developing fetus. Detailed information with respect to how this approach may be used to evaluate lead exposures in a baseline risk assessment is found in a USEPA technical memorandum from Pat Van Leeuwen and Paul White to Mark Maddaloni entitled "Use of TRW Interim Adult Lead Methodology in Risk Assessment," (dated April 7, 1999). Additional guidance on the use of the model is provided in the TRW guidance Frequently Asked Questions (FAQs) on the Adult Lead Model (USEPA, August, 2007). The output of the model is the risk (i.e., the probability) that elevated fetal blood-lead concentrations (i.e., concentrations greater than 10 ug/dL) will result due to exposures to women of childbearing age.

c.) Please clarify the third paragraph. Is the Navy proposing to calculate organ specific HI's for each route of exposure?

Response: In accordance with USEPA risk assessment guidance target organ specific HQs will be calculated when the cumulative HI exceeds 1. The text will be revised as follows:

An HI exceeding unity (1.0) indicates that there may be noncarcinogenic health risks associated with exposure. If a *cumulative* HI exceeds unity then target organ effects associated with exposure to COPCs are considered. Only those HQs for chemicals that affect the same target organ(s) or exhibit similar critical effect(s) are regarded as truly additive. Consequently, it may be possible for a cumulative HI to exceed 1.0, but no adverse health effects are anticipated if the COPCs do not affect the same target organ or exhibit the same critical effect. *If a cumulative HI exceeds 1 then a HQ will be calculated for each target organ. If the target organ HQ is less than 1 then no adverse health effects will be anticipated.*

d.) Please include the MEDEP Residential Guideline for lead in this paragraph.

Response: agreed

e.) 4<sup>th</sup> para. Please add "or Removal Action" at the end of the 2<sup>nd</sup> sentence.

Response: Agreed.

56. Page 5-16 Section 5.1.5, Human Health Risk ...:

a.) Please include in the Uncertainty Section a discussion of how the various assumptions, extrapolations and uncertainties inherent in the risk assessment methodology may impact the risk estimate, i.e., are they likely to over or under estimate risk.

Response: This information will be included in the risk assessment.

b.) The Uncertainty Section should also address the compounds for which there was insufficient toxicity information to quantitatively evaluate risk, the limited scientific data to adequately model potential contaminant uptake in produce, the inclusion of naturally occurring elements in the risk estimates, limited subchronic toxicity information for many compounds and any other issues, assumptions, and extrapolations that were made in this risk assessment.

Response: This information will be included in the risk assessment.

57. Page 5-17 Section 5.1.6, Derivation of Cleanup Goals: This is not a standard section of the Baseline Risk Assessment (see RAGs Part A). The Navy can provide Proposed Remediation Goals in the Baseline Risk Assessment but must recognize that their selection of COCs requiring remediation may not match the MEDEP and USEPA and that this step may need to be repeated as part of the FS or Removal Action.

Response: Comment noted.

58. Page 6-1, Section 6.0, Reports:

a.) Please add a section for the Conceptual Site Model in the RI report.

Response: This will be added.

b.) Please include the Electronic Data Deliverable required by the State of Maine.

Response: This will be added.

59. Page 6-2, Section 6.1, Recommendations: If the RI concludes no significant risk occur at the site,...

Please add: If the RI concludes no significant risk occur at the site, *either in its current state or if contaminated soil are brought to the surface*, then...

Response: This text change will be made.

60. Page 6-2, Section 6, final bullet: Please submit an electronic version of the field and laboratory data in MEDEP's electronic data deliverable format version 5, available at [www.maine.gov/dep/rwm/egad](http://www.maine.gov/dep/rwm/egad).

Response: agree.

61. Figure, Past Excavation:

a.) The legend incorrectly shows the excavation boundary as the road. Please correct.

Response: The correction will be made.

b.) The former buildings designation should have a dotted gray line. Please correct or delete that piece of the legend since the buildings are identified on the figure.

Response: The correction will be made.

c.) Please identify the gold dot on the legend.

Response: The gold dot will be identified

62. Figure, Proposed Sampling Locations:

a.) The former building designation should have a dotted gray line. Please correct or delete that piece of the legend since the buildings are identified on the figure.

Response: The correction will be made

b.) It would be helpful to add the depths of excavation to the figure from the draft final closure report.

Response: Concur

#### Appendix A:

63. Page 5, Worksheet # Column: For worksheet18, please change the Figure number to 3-1.

Response: The correction will be made

64. Page 10, Worksheet 6, Field Task modification Requests – Procedures. Please define "FTMR".

Response: After Field Task Modification Request (FTMR) will be added.

65. Page 14. Please include Worksheet 10.

Response: As discussed in the DQO meeting the Draft Work plan format will be kept as much as possible. There worksheet 10 will remain in section 2.1 -2.5.1 of the work plan.

66. Page 24, Worksheet 14, bullet 3:

a). Worksheet 17 (page 93) states there will be 68 soil samples. Please correct, as necessary.

Response: See response to comment 74.

b.) Laboratory analysis must also include site specific pesticides as well as the chlorinated pesticides.

Response : The sentence will be corrected to state that site specific as well as chlorinated pesticides will be analyzed.

67. Page 25 Worksheet 14,

a.) Analytical Tasks. This section references Section 3.2 of the text, however the text references this section. Please include a discussion of the Analytical Tasks in Section 3.2.

Response: The text will be corrected to refer reader to worksheet 19.

b.) Data Management Tasks, bullet 2: There is no Section 4.4.13. Please correct or include this information in the text.

Response: The bullet will be removed since the data management is discussed in the other sections.

68. Page 28, Worksheet 15a: Please add a footnote indicating that the PQLs are 1/3 the screening RBCs. Change the PAL header to RBC and reference the source of each RBC.

Response: The headers are defined by the UFP-Sap and cannot be changed. Ann

69. Page 29, Worksheet 15.a:

a.) Delete the DAF columns, delete the MEDEP RAGS and delete the Ecological SSL columns and reevaluate the PALs for Human Health.

Response: The PALs are intended to be the lower of the ecological or human health values so it is not clear why the Ecological SSLs should be deleted. The human health and ecological screening levels will be evaluated separately in their respective risk assessments.

b.) Ecological PALs need to be developed and included in the text and tables.

Response: The PALs are intended to be the lower of the ecological or human health values so separate Ecological PALs are not needed.

c.) What is the source of the Ecological SSL for DDD, DDE and DDT of 12.5 mg/kg? The PRG developed in the EE/CA to be protective of ecological receptors is 0.34 mg/kg. The source of all the ecological SSLs needs to be included to allow for proper review of these concentrations.

Response: The DDT screening level is the Canadian Soil Quality Guideline as noted in Appendix E. The DDT and dieldrin Ecological SSLs will be updated based on the recent USEPA Ecological SSLs that were revised in 2007. Note that the revised DDT screening level (0.021 mg/kg) is lower than the PRG developed in the EE/CA. That is because the screening levels are not meant to be used as cleanup levels or PRGs. Appendix E contains the sources of the ecological screening levels. However, the table in Appendix E will be revised because some of the analytes that were added to the analyte list were not included in the appendix and a few others have been updated..

70. Page 31, Table 15a: Delete Footnote 7.

Response: Deletion will be made.



71. Page 34 and 35, Table 15.b:

a.) Please indicate in a footnote if the MEGs were modified to reflect a  $10^{-6}$  risk and HI of 0.1.

Response: See response to comment 40f.

b.) Please update the Maine Maximum Exposure Guidelines to the 2007 version. This version reduces the MEG for Aldrin to 0.02. Please revise.

Response: concur

c.) The BHCs (benzene hexachloride) are also known as hexachlorocyclohexane (HCH) or its product name of Lindane or lindane breakdown products. The Region 9 numbers are alpha HCH - 0.011 µg/L, beta HCH-0.037µg/L, delta HCH NA, Gamma-HCH-0.052µg/L. Lindane has an MEG of 0.2ppb which is the total of the all the Lindane or HCH parent and breakdown products. Please revise table and add a footnote regarding the totaling.

Response: Corrections will be made to Table 15a.

d.) Endosulfan I, Endosulfan II, and Endosulfan Sulfate are all breakdown products of Endosulfan and for comparing to the MEGs must be totaled. Please revise table and add a footnote regarding the totaling.

Response: In cases such as this a note will be added to the Table that indicates the PAL for the total of the breakdown products and the QL will be set for each breakdown product as PAL divided by 3 times the number of breakdown products.

e.) Endrin, Endrin Aldehyde, and Endrin Ketone must also be added and compared to the MEG of 2µg/L.

Response: In cases such as this a note will be added to the Table that indicates the PAL for the total of the breakdown products and the QL will be set for each breakdown product as PAL divided by 3 times the number of breakdown products

f.) The Chlordane MEG (0.3 µg/L) is the total of both alpha chlordane and gamma chlordane. Please revise table and add a footnote regarding the totaling.

Response: In cases such as this a note will be added to the Table that indicates the PAL for the total of the breakdown products and the QL will be set for each breakdown product as PAL divided by 3 times the number of breakdown products

g.) MEDEP's former toxicologist/risk assessor provided the Navy with a risk based number for Avitrol in groundwater which is 0.7 µg/L which was used in the Long Term Monitoring Program for this Site. This number for comparison sake needs to be added to the table with a foot note.

Response: agree

h.) Please recheck the Region 9 numbers for cyanide which appears to be a decimal point off.

Response: Correction will be made.

72. Page 36. The text must indicate who will determine if Phase II sampling is necessary and how sampling locations will be determined. Please indicate if a Phase II Work Plan will be developed and available for review.

Response: An official work plan is not planned. We believe we discussed an approach of meetings to scope phase II.

73. Page 37, Worksheet 17:

a.) Sampling Methods: Please include Section 3.1.8 (for groundwater). There is no Section 3.15, please correct or remove.

Response: Agreed. The sentence will be corrected as follows: "Additional details of the sampling procedures are provided in Sections 3.1.3 and 3.1.8 of the work plan."

b.) Sampling Frequency "Phase 2" Soil and Groundwater Sampling: Regulators must have a chance to review and comment on these decisions and this must be indicated in the text.

Response: Agreed. The following sentence will be added to the end of the paragraph: "Following the data validation, the Navy will evaluate the completeness of the data and provide recommendation for regulator review and comment."

c.) Soil Boring Locations: "...downgradient of potential contamination sources from former off-site diesel and gasoline tanks."

MEDEP recollects there is a fuel station to the north and the former Old Fuel Farm lies to the east (cross-gradient) so please identify which building(s) or former buildings that these tanks were associated with.

Response: The sentence was referring to tanks previously located at the former Fuel Farm. The sentence will be revised as follows: "...downgradient of potential contamination sources from former off-site diesel and gasoline tanks located at the Fuel Farm."

74. Pages 37, Worksheet 17, Soil Boring Locations and Page 39, Number of Samples: The number of soil boring locations are inconsistent between these two sections. Please correct, as necessary

Response: The total number of borings is 44 which is consistent with Worksheet 17 (page 37). On page 39, the following changes will be made: The total number of borings will be changed from 45 to 44. The total number of soil boring locations in non-excavated areas is changed from 21 to 20, and the total number of soil samples is changed from 68 to 66 (as a result of reducing the number of borings in non-excavated areas by one soil boring.) In addition, on page 38, bullet 2, Non-Excavated Areas, the number of locations will be changed from 21 to 20.

75. Page 38, Worksheet 17, Soil Boring Depths:

a.) As discussed in the DQO meeting, MEDEP does not allow composite samples to be used in the risk assessment. As such, please clarify that "one composite sample" refers to a composite of the interval being sampled and not of multiple intervals or the entire boring. See Excavated Area Depths and Non Excavated Areas text.

Response: Agreed. The suggested clarification will be made verbatim.

b.) Bullet 1, para 2: To avoid any confusion MEDEP suggests adding the word "the former" before Building 31 in this section.

Response: Agreed.

c.) Bullet2, 2<sup>nd</sup> para. Please define "borderline".

Response: "Borderline" represents the risk-based screening level. Also, see the Response to Comment 73b.

76. Page 39, Worksheet 17, Phase 1 Soils, first two bullets: Please identify the intervals.

Response: The intervals are added as follows:

- Excavated Area – Deep boring west of Building 31: 1 location x 3 intervals (0-3 ft, 3-6 ft, and 6-9 ft.) = 3 samples
- Excavated Area – Shallow borings (non-soil strip): 11 locations x 1 interval (0-3 ft) = 1 sample

77. Page 40, Worksheet 17, Soil, bullet 2: Please add cyanide to this list or where ever is most appropriate.

Response: Cyanide will be added to page 40.

78. Page 40, Worksheet 17, Soil, bullet 3: Please add the word former before the fuel farm to indicate that is no longer there.

Response: Agreed.

79. Page 42, Table 17:

a.) SB 101 – SB 104, Location: Is the fence being referenced the dog kennel fence? If so, please identify it in the table.

Response: Agreed.

b.) SB 119-SB-122, Location: Please add "*former*" Building 95 and 31.

Response: Agreed.

It would be helpful in the justifications if the delineation for vertical, horizontal or both is added.

Response: Agreed.

## **Appendix B**

80. Page 27, Worksheet 15a: The Project Action Limit for DRO in soils should be listed as 10 mg/kg rather than 50, please revise.

Response: corrections will be made.

81. Pages 32 & 35, Worksheet Table 15b:

a.) The most recent (2007) version of the Maine Maximum Exposure Guidelines should be referenced in the table, rather than the 2000 listing.

Response: concur

b.) The table lists Pyrethrum as an analyte (with no Project Action Limit). Based on MEDEP's review the analyte list should include pyrethrins, a group of compounds including pyrethrum, to better assess the residual contamination at the site, and provide consistency with prior investigations. The previous target cleanup criteria (driven by the ecological risk) was 5 mg/kg, based on the Action Memorandum dated April 1993. The cleanup limit was set at 10 mg/kg for total pyrethrins due to limitations of the HPLC analytical method available at the time. Please add pyrethrins to the table and throughout the SAP as needed. Please add

Response: Concur and pyrethrum will be added throughout the SAP.

82. Pages 37 & 43, Worksheet 17 – Sampling Frequency, and Worksheet 18: Worksheet 18 indicates the full range of analyses will be run on the groundwater samples, but the text in Worksheet 17 indicates that the Phase 1 soil sampling will be used to select some of the groundwater parameters. The groundwater list should include at least the compounds previously detected at the site. Please revise.

Response: Worksheet 17 will be updated and corrected to match the analyses shown in Worksheet 18.

83. Page 38, Worksheet 17, Soil Boring Depths:

a.) Bullet 1: The text contradicts the table in Worksheet 18, which indicates that the shallow well will be in a boring sampled 0-3' below the fill, while the deep well boring will be sampled at three depths. The two sets of samples can't be from the same boring as stated, please revise. MEDEP understands that in this case "co-located" means they will be close together but separate locations.

Response: Worksheets 17 and 18, Table 17-1, and Sections 3.1.3.1 and 3.1.4 will clarify that borings SB106, 120, 121 and 134 will be deepened for completion of monitoring wells MW-NASB17-01S, MW-NASB17-02S, MW-NASB17-02D, and MW-NASB17-03, respectively.

b.) Bullet 3: The soil strip boring sample interval should be selected based on the stratigraphy visible in the sample tube as well as the interpreted depth, and presence of the geotextile, if visible, to avoid sampling the wrong interval.

Response: The intent of the strip borings are to collect contaminated soil buried beneath fill and/or geotextile, if observed.

84. Page 42, Worksheet 17, Table 17-1:

a.) The table should be revised to indicate that SB-106 will be converted to a monitoring well rather than SB-111.

Response: See Response to Comment 83a.

b.) MEDEP notes that based on the relatively localized nature of "hot-spots" previously delineated at Site 17, SB-123 may be located too far south to evaluate discharges from the back steps at Building 95. It will however, be positioned to delineate any impacted soils between the main site and the area south of Avenue B. Therefore the Navy must either add another boring to evaluate discharges from the steps of Building 95 or remove the statement.

Response: The following statement will be deleted: "SB 123 is near the steps of Building 25 to capture potential downgradient contamination."

c.) The table should also note that SB-134 will be converted to a monitoring well.

Response: See Response to Comment 83a.

85. Page 43, Worksheet 18, Sample Locations and Methods: The SB-101 to SB-104 soil boring group should be analyzed for DRO as well as the other parameters, as this is one of the justifications for this line of borings. The data also will provide upgradient locations for comparison to the 4 locations within the main site.

Response: DRO analyses will be added to those borings.

86. Page 43. Worksheet 18: The Sampling SOP reference should be Section 3.1.8 for groundwater.
87. Pages 44 & 45, Worksheet 19: Some analytes of concern are not covered by the proposed methods. Perhaps some of these "missed" analytes could be done by proposed methods, but the Navy would have to show how. MEDEP has listed the methods found that cover them in "Possible method" column and in the case of 24 D and 245 T notes that the Navy should be able to cover these two herbicides with the same test being used for Baygon, Monuron, Drexel and Sevin. That will save an analysis, so long as the lab can obtain an adequate detection limit with that method. Note that method 1660 is written for wastewater. It should work well for groundwater, but may need to be adapted for soils. (EPA Region 10 does have an SOP that includes PMD-PYR-LC1 for pyrethrins.)

Analyte	Navy Proposed method	Possible method
DDT	8081	
DIELDRIN	8081	
CYNDGAS	9012	
PYRETHRINS		1660 [would have to be adapted for soils]
RESMETHRIN		1660
BAYGON	8231	
MALATHION	8141	
SIMAZ	8141	
MALEIC HAZDRAZIDE		HPCL [Meyer, Henze G; Fresenius' Z Anal Chem 332 (8) 898-903]
ZINC PHOSPHIDE	6010	
MONURON TCA	8321	
DREXEL	8321	
DIAZINON	8141	

AVITROL		EPA-B Method PMD-AMN
CHLORDANE	8081	
SEVIN	8321	
ROTANON		8325
2, 4, 5-T	8151	8321 [save a method since already doing]
2, 4-D	8151	8321 [save a method since already doing]
ARSENIC LEAD	6010	

Response: A column will be added to worksheet 15 that will include the analytical method. Currently from the table above the analytical method that will be performed by the laboratory for the compounds is:

Pyrethrins 8081  
Resmethrin 8081  
Maleic Hydrazide 8321  
Avirol 8141  
Rotanon 8321

#### **Appendix D:**

88. Table 4.1 RME: MEDEP assumes an exposure frequency of 173 days/year for the construction worker. This corresponds to exposure 5 days/week for 8 months over a 1 year exposure duration (i.e., 5/7 days \* 8/12 months \* 365 days/year). This is not a significant change; however, it would be consistent with other risk assessment recently completed for the MEDEP.

Response: Agreed. The exposure frequency will be changed to 173 days/year.

89. Table 4.1 CTE. Given the unique manner in which a construction worker is assumed to contact soil only the RME scenario needs to be evaluated.

Response: Comment noted. A CTE scenario will still be evaluated for the construction worker to provide a range of risk estimates.

90. Table 4.2 RME. If this scenario is to be quantitatively evaluated, please include the Unit Intake Calculations.

Response: The intake equations will be added to this table.

91. Table 4.2 – Soil to Air. The need to qualitatively evaluate this route of exposure should be determined as part of the selection of COPCs. The maximum soil concentration of each detected contaminant should be compared to the USEPA Region IX PRGs developed for a residential inhalation exposure scenario. This route of exposure would not need to be evaluated in the risk assessment if all detected soil contaminants are present at

concentrations below their respective inhalation PRG. If this route of exposure is to be evaluated in the risk assessment a discussion of the proposed modeling will need to be included in the text.

Response: See response to comment 40b.

92. Table 4.2 CTE. If inhalation of fugitive dust is considered to be a potentially significant route of exposure, it would only need to be evaluated for the construction worker under a RME scenario.

Response: See response to comment 89.

93. Table 4.3 RME. Please provide the rationale for the Exposure Frequency of 30 days. This exposure pathway would only be evaluated for those compounds having an oral/dermal ratio greater than 10 percent (as listed in Exhibit B-3 of RAGs Part E). Please include this in the text.

Response: A construction worker will not be exposed to groundwater during the entire length of a construction project. Exposure to groundwater will only occur during excavation of building foundations or trenches. The exposure frequency of 30 days assumes that the construction worker is exposed to groundwater for 6 weeks of the overall construction project. This is believed to be a conservative assumption because significant exposures by a construction worker to groundwater are unlikely because if a construction worker is going to have prolonged contact with groundwater then he/she would most likely wear protective clothing such as rubber boots and/or hip waders, which would limit their exposure. In addition, most excavation activities would utilize construction equipment such as a back hoe, which would limit a construction worker's exposure. Also, if significant groundwater was encountered during an excavation of a trench or foundation, the groundwater would most likely be pumped out of the excavation so that the construction activities could be completed. The rationale for all non-default exposure assumptions will be provided in the text of the risk assessment.

The oral to dermal ratio of 10 percent only applies for residential exposures to groundwater when the oral route is represented by the ingestion of 2 liters of water per day. It is not applicable for non-residential exposures.

94. Table 4.3 CT. It is not necessary to evaluate the CTE for the construction workers exposure to groundwater.

Response: See response to comment 88.

95. Table 4.4 RME and CTE. What data will be used to evaluate this route of exposure? VOCs were not detected in the groundwater sample collected as part of the EE/CA and VOC sampling is not being proposed as part of this Work Plan.

Response: Tables 4.4.RME and CTE will be deleted from the work plan since VOCs are not being analyzed for as part of this investigation.

96. Table 4.5 CTE. The exposure duration for this scenario can be lowered to 6.6 years based on the information presented in Appendix 15 of the Exposure Factors Handbook (USEPA, 1997).

Response: The value of 6.6 years will be rounded up to 7 years for use as the exposure duration for the CTE scenario.

97. Table 4.6 RME and CT. If this route of exposure is to be quantitatively evaluated a discussion of the proposed modeling will be required in the text including the rationale for the inhalation rate and PEF.

Response: Agreed. If the inhalation exposure pathway is retained for quantitative evaluation then the rationale for the exposure assumptions presented in Table 4.6 will be discussed in the text of the risk assessment.

98. Table 4.7 RME and CTE and Table 4.9 RME and CTE. These four scenarios are very similar as is evidenced by the small differences in the cancer and non-cancer intakes. As such, only the older child trespasser scenario RME needs to be quantitatively evaluated. This receptor/scenario results in the greatest potential exposure and can act as a surrogate for the other receptors. If "no risk" is determined for this receptor there would be "no risk" for the others. If a "significant" risk is determined for this receptor the residential risks would also be "significant" and remedial actions would be evaluated.

Response: Tables 4.7 through 4.9 presents exposure assumptions for two receptors: an older child trespasser and an adult trespasser. While noncancer risks will be higher for the older child trespasser cancer risks will be higher for the lifelong trespasser (combine older child and adult), therefore risks will be evaluated for both receptors.

99. Table 4.8 and 4.10. If this route of exposure is to be quantitatively evaluated a discussion of the proposed modeling will be required in the text including the rationale for the inhalation rate and PEF.

Response: Agreed. If the inhalation exposure pathway is retained for quantitative evaluation then the rationale for the exposure assumptions presented in Tables 4.8 and 4.10 will be discussed in the text of the risk assessment.

100. Table 4.9 RME and CT. Please provide the rationale for the Fraction Ingested.

Response: The incidental ingestion rates are the amount of soil that an individual ingests over the course of an entire day from exposure to all sources. A fraction ingested of 0.5 is used to account for the receptor only being at the site part of the day and from being exposed to other sources of soil. This information will be included in the risk assessment.

101. Table 4.11 through 4.19 Residential Exposure – The MEDEP recognizes the EPA standard residential scenario. As such, the RME residential exposure scenario should be based on a 30 year exposure duration – 6 years as a child and 24 years as an adult and age adjusted dermal and ingestion factors. The CTE residential scenario should be based on a 9 year exposure duration 2 years as a child and 7 years as an adult. If VOCs are detected in the groundwater please indicate that the intake for inhalation is assumed to be equal to the intake from ingestion of groundwater.

Response: While it is recognized that noncarcinogenic risks will be highest for the child resident and carcinogenic risks will be highest for the lifelong resident it is also informative to have hazard indices and cancer risks for the individual child and adult residents. In addition, USEPA Region I now requires carcinogens that act via a mutagenic mode of action to be evaluated according to USEPA's Guidelines for Carcinogen Risk Assessment (USEPA, 2005a) and Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005b). For chemicals that act via the mutagenic mode of action



such as PAHs, this will require that four separate age groups be evaluated for lifelong exposures: child( ages 0 to 2), child (ages 2 to 6), adults (ages 6 to 16), and adults (ages 16 to 30). Tables 4.11 through 4.19 will be revised to reflect the new guidance.

As noted in comment 95, groundwater is not being analyzed for VOCs so inhalation exposures for groundwater will not be evaluated.

102. In addition, a separate exposure evaluation needs to be included to evaluate the non-carcinogenic risks to a child from a 6-year residential ingestion of soil exposure scenario. This scenario is necessary because children ingest more soil and have a lower body weight than adults which results in a disproportionate risk for children. Risk estimates must be based on subchronic toxicity factors and these factors must be included in the risk assessment.

Response: Non-carcinogenic risks will be calculated for all exposures pathways that have been identified for the child resident. While subchronic exposures are defined as those exposures which occur for less than seven years USEPA typically requires that chronic toxicity criteria be used to evaluate non-carcinogenic risks for children. For example, the noncarcinogenic USEPA Region IX PRGs for residential exposures are based on chronic toxicity criteria. In addition there is only subchronic toxicity criteria available for a very few compounds. If available subchronic toxicity criteria will be used for the child resident and if subchronic criteria is not available then the chronic toxicity criteria will be used.

## **Appendix F**

103. Page 1 Delineation of Contamination – GW. Deleted the reference to BKG.

Response: Disagreed. It is appropriate to use background in delineating contamination.

104. Page 1 Delineation of Contamination – GW. Duplicates are to be averaged and considered a single data point.

Response: Agreed.

105. Page 1 Delineation of Contamination – GW – Note: Please remove reference to the “SSL for migration and ecological risk”.

Response: Disagreed. All applicable screening criteria should be used to delineate contamination. Contamination should not be delineated using only direct contact human health criteria.

106. Computation of Number of Samples for Investigation NAS Brunswick Site 17. The statistical approach presented in this Appendix is inappropriate for biased sampling. Please revise.

Response: Section 7.5.1 of EPA (2002) states:

“Many of the sample size formulae provided for simple random sampling (i.e., the sample size formula for estimating a mean provided in Chapter 4) can be used for systematic [i.e., grid] sampling as long as there are no strong cyclical patterns, periodicities, or significant spatial correlations between pairs of sample locations not introduced as part of the grid or systematic process.”

The reference in EPA (2002) to Chapter 4 is an error and it should be a reference to Chapter 5. In Chapter 5 of EPA (2002) the following statement is made:  
“Sample size formulae for achieving specified power for hypothesis tests are in Section 3 of *Guidance for Data Quality Assessment (QA/G-9)* (EPA, 2000a).”

The cited Data Quality Assessment guidance (2000a) has been replaced with EPA (2006a). Section 3 of this guidance (EPA, 2006a) is similar to, and consistent with, the guidance (EPA, 2006b) on which the number of sample calculations was based for the Site 17 project. Therefore, no change has been made to the SAP in response to this comment. However, if the state has a different calculation in mind that is appropriate for this application, NAVFAC will consider its use.

EPA, 2002. Guidance on Choosing a Sampling Design for Environmental Data Collection for Use in Developing a Quality Assurance Project Plan EPA QA/G-5S, United States Environmental Protection Agency, December.

EPA 2006a Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S, United States Environmental Protection Agency, February

EPA, 2006b. Guidance on Systematic Planning Using the Data Quality Objectives Process EPA QA/G-4, United States Environmental Protection Agency, February